

## Contents

---

### Micromachining

NH <sub>4</sub> OH-based etchants for silicon micromachining: influence of additives and stability of passivation layers . . . . .	1
U. Schnakenberg, W. Benecke, B. Löchel, S. Ullerich and P. Lange (Berlin, F.R.G.)	
Methods for the fabrication of convex corners in anisotropic etching of (100) silicon in aqueous KOH . . . . .	9
H. L. Offereins, K. Kühl and H. Sandmaier (Munich, F.R.G.)	
Micromachining with focused ion beams . . . . .	15
R. Clampitt, P. W. Mingay (Witney, U.K.) and S. T. Davies (Coventry, U.K.)	
Silicon pressure sensor with integrated CMOS signal-conditioning circuit and compensation of temperature coefficient . . . . .	21
H.-J. Kress, F. Bantien, J. Marek and M. Willmann (Reutlingen, F.R.G.)	

### Software Techniques

Software techniques for sensor compensation . . . . .	29
J. E. Brignell (Southampton, U.K.)	
On-line optimization in sensor frequency response compensation . . . . .	37
W. H. Shi and J. E. Brignell (Southampton, U.K.)	
Sensor fault detection and localization using decorrelation methods . . . . .	43
K. Kroschel and A. Wernz (Karlsruhe, F.R.G.)	
Statistical analysis evaluation of a multisensor system . . . . .	51
F. Betancourt (Coah, Mexico), L. J. Barrios, D. Guinea, A. Ruiz and S. Ros (Madrid, Spain)	
Sensor electronics using pseudo-random discrete signals: features and problems of a new strategy . . . . .	57
R. Möser (Braunschweig, F.R.G.)	

### Packaging and Interconnection

Packaging and interconnection of sensors . . . . .	63
H. Reichl (Berlin, F.R.G.)	
Reliability and fault tolerance of low-cost multipoint sensor interfaces . . . . .	73
U. Wagner (Hannover, F.R.G.)	
Design considerations for micromechanical sensors using encapsulated built-in resonant strain gauges . . . . .	79
H. A. C. Tilmans, S. Bouwstra, J. H. J. Fluitman (Enschede, The Netherlands) and S. L. Spence (Milwaukee, WI, U.S.A.)	
Silicon direct bonding for sensor applications: characterization of the bond quality . . . . .	87
C. Harendt, B. Höfflinger, H.-G. Graf and E. Penteker (Stuttgart, F.R.G.)	

### Automotive Sensors

Sensors as key components for automotive systems . . . . .	95
B. Bertuol (Toulouse, France)	
A miniaturized high-temperature pressure sensor for the combustion chamber of a spark ignition engine . . . . .	103
R. Mock and H. Meixner (Munich, F.R.G.)	

### Bus Systems

Bus systems . . . . .	109
W. Henning (Munich, F.R.G.)	
Progress in fieldbus developments for measuring and control applications . . . . .	115
A. Schwaijer (Karlsruhe, F.R.G.)	
The Token Bus Modem . . . . .	121
D. Leisengang (Munich, F.R.G.)	

Sinec concept and implementation . . . . .	125
K. Becker (Mering, F.R.G.) and E. Flaschka (Munich, F.R.G.)	
State of the development of a fieldbus chip . . . . .	129
C. Schuur (Eindhoven, The Netherlands)	
BiCMOS bus interface logic for advanced system applications . . . . .	133
L. Katz (Freising, F.R.G.)	
M-Bus, a bus concept for battery operated meters . . . . .	139
H. Brenninger (Freising, F.R.G.)	
<b>Infrared Sensors</b>	
Infrared detection, some recent developments and future trends . . . . .	147
Ch. Lucas (Grenoble, France)	
Integrated optical sensors based on reactive low-voltage ion-plated films . . . . .	155
R. E. Kunz, C. L. Du (Zurich, Switzerland), J. Edlinger, H. K. Pulker (Balzers, Liechtenstein) and M. Seifert (Frauenfeld, Switzerland)	
Fast field sensing with photodiode arrays . . . . .	161
W. Heering and M. Brandenbusch (Karlsruhe, F.R.G.)	
Pyroelectric detector array with PVDF on silicon integrated circuit . . . . .	167
W. V. Münch and U. Thiemann (Stuttgart, F.R.G.)	
<b>Optical Sensors</b>	
Photodiodes in epitaxial laterally overgrown silicon for image sensors in 3D-technology . . . . .	175
P. Vöhringer, W. Appel, G. Graf, B. Höfflinger and R. Zingg (Stuttgart, F.R.G.)	
Input and output grating couplers as integrated optical biosensors . . . . .	181
W. Lukosz, D. Clerc and Ph. M. Nellen (Zurich, Switzerland)	
Integrated optical interferometer as relative humidity sensor and differential refractometer . . . . .	185
W. Lukosz and Ch. Stamm (Zurich, Switzerland)	
<b>Fibre Sensors</b>	
Optical fibres for sensors . . . . .	191
W. A. Gambling (Southampton, U.K.)	
An optical fibre displacement sensor with extended range using two-wavelength referencing . . . . .	197
X. P. Liu, R. C. Spooncer and B. E. Jones (Uxbridge, U.K.)	
Fiber-optic displacement sensor with $0.02 \mu\text{m}$ resolution by white-light interferometry . . . . .	201
A. Koch and R. Ulrich (Hamburg, F.R.G.)	
An all-optical single-fibre micromachined silicon resonant sensor: towards a commercial device . . . . .	209
D. R. Vincent (Christchurch, U.K.) and J. N. Ross (Southampton, U.K.)	
Improved design for a fibre-optic shock-wave sensor . . . . .	213
J. Niewisch (Erlangen, F.R.G.)	
Optical fiber flowmeter with temperature correction . . . . .	219
J. P. Herzog, P. Roth (Stutensee, F.R.G.) and P. Meyrueis (Strasbourg, France)	
<b>Thick-film Sensors</b>	
Thick-film technology . . . . .	227
M. Prudenziati (Modena, Italy)	
A laser power detector built up by application of thick-film technology . . . . .	235
J. Nicolics and W. Smetana (Vienna, Austria)	
<b>Humidity Sensors</b>	
Three-dimensional modelling of capacitive humidity sensors . . . . .	243
L. Chandran, H. Baltes and J. Korvink (Zurich, Switzerland)	

